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First record of *Pipistrellus pygmaeus* (Leach, 1825) (Chiroptera: Vespertilionidae) for Bulgaria

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Introduction

Since the first publications about the possibilities of a phonic discrimination of bats with bat detectors, it has been found that two types of specimens with different echolocation calls exist within the well known European species *Pipistrellus pipistrellus* (Schreber, 1774) (AHLEN, 1981; WEID & V. HELVERSEN, 1987). Later, it was detected that these types occur in sympatry and differ genetically (BARRATT et al. 1993; 1995; 1997; MAYER & V. HELVERSEN, 1999). These observations indicated that two sibling species occur in Europe (JONES & PARIJS, 1993): *P. pipistrellus* (45-kHz form)[1] and *P. pygmaeus* (55-kHz form). Finally, studies in Germany (HÄUSSLER et al., 2000) have shown that these sibling species can be distinguished on the basis of morphological differences in external characters, too: a) the 2nd and the 3rd phalanges of the 3rd finger are of the same length in *P. pygmaeus*, while in *P. pipistrellus* the 3rd phalange is in most cases shorter than the 2nd by more than 1 mm; b) the colour of the penis integument in adult *P. pygmaeus* is orange without a distinct median band in contrast to the greyish penis with a light median band in *P. pipistrellus*; c) *P. pygmaeus* has a longitudinal ridge-like structure, between the nostrils, that *P. pipistrellus* lacks.

During a Bulgarian-German co-operation project about the ecology of the sympatric *Rhinolophus*-species we spent some time in the Eastern Rhodopes Mts. On 12th September 2001 we found a single male pipistrelle, which we determined as *Pipistrellus pygmaeus* according to the above criteria. Having in mind that the distribution of the species is still poorly known, we present here a description of the specimen and data on the area, locality and roost. Beside this, a tissue sample for genetic characterization was taken, but it has not been analyzed up to now.

[1] The taxonomic legitimacy of the name *Pipistrellus pygmaeus* (Leach, 1825) is still unclear. Another possible name for the 55-kHz pipistrelle (JONES & PARIJS, 1993) is *Pipistrellus mediterraneus* (Cabrera, 1904). Here we use the currently more common name *P. pygmaeus*.

Description

Area, locality and roost. The single *Pipistrellus pygmaeus* male was found on a slope over the river Arda near Madjarovo (41°38'41" N, 25°52'24" E), Kardjali district, in the Eastern Rhodopes Mts. at an altitude of 180 m a.s.l.

The roost was about 1.5 m above ground behind the loose bark of a dead oak (*Quercus* spp.) that was broken at a height of four metres and measured 25 cm in diameter. The tree was situated at the edge of a low growing oak forest near a rocky area with sparse vegetation.

Age and sexual activity. According to HÄUSSLER et al. (2000) in individuals born in the same year, the coloration of the fur is more uniform than in our individual, showing that it had not been born in the year it was found. Since the teeth were very sharp the epididymis black (indicating that the male had not been sexually active before) and the bare skins on the face were darker than in older individuals from Germany, it was estimated to be one and a half years old. The male had been sexually active because it had an intensive musk-like odour, strongest near the face, and the testes were swollen.

Pelage. Olive brown and slightly shorter at the back than in *P. pipistrellus*.

Bare skin parts. Not so dark as in *P. pipistrellus*. The skin areas around the eyes and between the eyes and ear were pale brownish. The inner margin of the auricle and the basis of the tragus were also pale.

Flying membrane. The margin of the plagiopatagium between the 5th finger and the leg, and the epiblema were white. The fur at the dorsal part of the uropatagium reached further distally than in the sibling species, more comparable to *P. nathusii*.

Measurements taken of the living individual (Table 1) - The length ratio between the second and third phalange of the third finger is nearly 1:1. In this respect it is similar to *P. pipistrellus mediterraneus* (now *P. pygmaeus*) as described by CABRERA (1904).

Table 1
Measurements of *P. pygmaeus*, male, adult, from Madjarovo, 12.09.2001

Length of forearm	Length of 5th finger	Length of 2nd ph. of the 3rd finger	Length of 3rd ph. of the 3rd finger	Ear length	Weight	Peak frequency
29,2 mm	35,6 mm	8,0 mm	7,95 mm	6,9 mm	4,2 g	55 kHz

Ears and muzzle. The ears were short (shorter than in *P. pipistrellus*), more narrowly rounded at the tip and the inner border of the conch curved

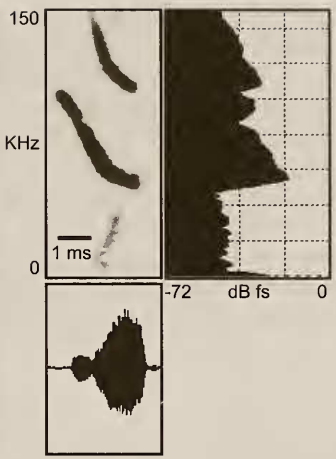

Fig. 1. Portrait of *Pipistrellus pygmaeus* male, adult, 12.09.2001 Madjarovo, Bulgaria. Photograph: C. Dietz

Fig. 2. Echolocation call of *Pipistrellus pygmaeus* male, adult, 12.09.2001 Madjarovo, Bulgaria, recorded in flight tent, with the animal held in hand. The signal is represented as sonagram (center), time signal (bottom) and averaged power spectrum (right). Peak frequency: 55 kHz. Record: B.M. Siemers

inwards (Fig. 1). The "longitudinal ridge-like structure...between the nostrils", characteristic for *P. pygmaeus* (HÄUSSLER et al., 2000) was found, too.

Penial morphology. The excellent discrimination character of the penial morphology was present: the penis had no pale medial stripe and was visibly orange, not grey-brown like in *P. pipistrellus.*

Echolocation. In the flight tent and when held in hand the individual emitted echolocation calls with peak and terminal frequency around 55 kHz (Fig. 2), characteristic for the separated sibling species, *P. pygmaeus* (BARRATT et al., 1997). For methods of sound recording and analysis see SIEMERS & SCHNITZLER (2000).

Discussion

The characteristics of the first *P. pygmaeus* recorded in Bulgaria correspond very well to those given by HÄUSSLER et al. (2000) for southern Germany, indicating that these characteristics, specifically the penial coloration and morphology and the internarial ridge, are valid also on the Balkan peninsula and allow to determine living pipistrelle bats. Like in many other regions, the sibling species *P. pipistrellus* occur in the area around Madjarovo, too (IVANOVA unpubl.). The German *P. pygmaeus* seem to prefer roosts in or near forests, especially bat-boxes (BRAUN & HÄUSSLER, 1999; KOCH & V. HELVERSEN, 2000). If we assume, based also on our Bulgarian record, that

this species is predominantly a tree-dwelling bat, suitable roosts cannot be a limiting factor in most of the Bulgarian forests, where many trees have cracks or crevices. In Great Britain the preferred hunting habitats of *P. pygmaeus* are water edge habitats with woodland or hedgerows (OAKELEY & JONES, 1998), which are also quite common habitat types in Bulgaria. In our case possible hunting areas around the roost are the oak forests along the river Arda. Accordingly, we expect *P. pygmaeus* to be a fairly common species, at least in the southern parts of the Balkan peninsula, where our record is not too far away from sites in Greece (WEID & V. HELVERSEN, 1987; HANAK et al., 2001) and the Turkish Aegean coast (NAGEL, DIETZ & SCHUNGER unpubl.), where the species was also found.

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Първо съобщение на *Pipistrellus pygmaeus* (Leach, 1825) (Chiroptera: Vespertilionidae) за България

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(Р е з ю м е)

За първи път се съобщава за намирането на *Pipistrellus pygmaeus* (Leach, 1825) в България. Направено е описание на находището и на намерения в околностите на Маджарово, Източни Родопи, мъжки екземпляр. Посочени са размерите и характеристиките на някои систематични белези и са сравнени с тези на индивиди от Германия.